

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A
FILING UNDER 35 U.S.C. 371**

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)

09/700066INTERNATIONAL APPLICATION NO.
PCT/EP99/02819INTERNATIONAL FILING DATE
27.4.1999 (27 April 1999)PRIORITY DATE CLAIMED
9.5.1998 (9 May 1998)

TITLE OF INVENTION

Mobile Transponder for A motor Vehicle

APPLICANT(S) FOR DO/EO/US

Ruediger BARTZ and Carsten BEFELEIN

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371
3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2)).
- a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
- b. ☒ has been transmitted by the International Bureau
- c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)).
- a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
- b. ☐ have been transmitted by the International Bureau.
- c. ☐ have not been made, however, the time limit for making such amendments has NOT expired.
- d. ☐ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). (Unexecuted)
10. ☒ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Item 11. to 16. below concern other document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A FIRST preliminary amendment.
- ☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:
- a. 2 Sheets of drawings showing Figs. 1-2
- b. Form PCT/IB/308

U.S. APPLICATION NO. (if known, see 37 CFR 1.5) 09/700066		INTERNATIONAL APPLICATION NO. PCT/EP99/02819		ATTORNEY'S DOCKET NUMBER 951/49329	
17. <input checked="" type="checkbox"/> The following fees are submitted: Basic National Fee (37 CFR 1.492(a)(1)-(5)):				CALCULATIONS	
Search Report has been prepared by the EPO or JPO \$860.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) \$690.00 No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) \$710.00 Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$ 1000.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) \$100.00				860 00	
ENTER APPROPRIATE BASIC FEE AMOUNT =				\$860.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than [] 20 [X] 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$130.00	
Claims	Number Filed	Number Extra	Rate		
Total Claims	3-20 =		X \$18.00	\$	
Independent Claims	1-3 =		X \$80.00	\$	
Multiple dependent claims(s) (if applicable)			+ \$270.00	\$	
TOTAL OF ABOVE CALCULATIONS =				\$990.00	
Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).				\$	
SUBTOTAL =				\$990.00	
Processing fee of \$130.00 for furnishing the English translation later than [] 20 [] 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$	
TOTAL NATIONAL FEE =				\$990.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +				\$	
TOTAL FEE ENCLOSED =				\$990.00	
				Amount to be: \$	
				refunded	
				charged \$	
a. <input checked="" type="checkbox"/> One check in the amount of \$ <u>990.00</u> for the filing fee is enclosed b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees, which may be required, or credit any overpayment to Deposit Account No. <u>05-1323</u> . A duplicate copy of this sheet is enclosed. NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(f) or (b)) must be filed and granted to restore the application to pending status. SEND ALL CORRESPONDENCE TO: Evenson, McKeown, Edwards & Lenahan, P.L.L.C. 1200 G Street, N.W., Suite 700 Washington, D.C. 20005 Tel. No. (202) 628-8800 Fax No. (202) 628-8844					
for <i>[Signature]</i> 24392				SIGNATURE	
				Donald D. Evenson	
				NAME	
				26.160	
				REGISTRATION NUMBER	
				November 9, 2000	
				DATE	

Attorney Docket: 951/49329
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: RUEDIGER BARTZ ET AL.

Serial No.: NOT YET ASSIGNED PCT No.: PCT/EP99/02819

Filed: November 9, 2000

Title: MOBILE TRANSPONDER FOR A MOTOR VEHICLE

PRELIMINARY AMENDMENT

Box PCT
Commissioner for Patents
Washington, D.C. 20231

Sir:

Please enter the following amendments to claims prior to the examination of the application.

IN THE CLAIMS:

Cancel Claims 1-4 and add new Claims 5-7:

-- 5. A mobile transponder for vehicles with an optical indicator corresponding to the vehicle, said mobile transponder comprising:

a plurality of antennas having three-dimensional directional characteristics for recognizing a signal from the vehicle and providing a directed output;

evaluation logic receiving said directed output and providing output information concerning direction and location of the vehicle in relationship to the mobile transponder;

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a display for receiving and displaying said information concerning direction and location of the vehicle.

6. A mobile transponder according to Claim 5, wherein said information from said directed output from said plurality of antenna provides an indication of the distance of the vehicle from the mobile transponder.

7. A mobile transponder according to Claim 6, wherein the distance indication is presented by means of said display.

REMARKS

Entry of the amendments to the claims before examination of the application is respectfully requested. These claims have been amended to remove multiple dependencies/These claims patentably define over the art of record.

If there are any questions regarding this Preliminary Amendment or this application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

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Mobile Transponder for a Vehicle

The invention relates to a mobile transponder for a vehicle with a visual display.

Such a key is known from the DE 3740770 A. The visual display signals whether the vehicle is locked. However, it is often necessary to obtain information about the location of the vehicle. In this context it is known to provide a key of the vehicle with a voice storage, into which the location of the vehicle can be spoken (see DE 4309819 A). Relocating the vehicle is a function of whether this measure was actually performed, e.g. upon leaving the vehicle.

The invention is based on the problem of providing a mobile transponder for vehicles, whose visual display makes it possible to obtain an additional statement about the vehicle.

This problem is solved by the features of patent claim 1

It is now possible with the aid of the visual display to recognize where the vehicle is located. An interrogation signal is transmitted over the antennas. The result is that the vehicle responds in the form of a radio signal. This response is evaluated in the transponder and displayed as visual information. Thus, it is absolutely possible with the directional characteristics of the antennas to detect the location of the vehicle with respect to its direction relative to the respective position and alignment of the transponder. This direction is signaled to the driver by an appropriate visual display.

The visual display can be designed as a small display, for example an LCD display. The direction, in which the vehicle is located with respect to the mobile transponder, can be presented as an arrow inside the display.

Correspondingly it is possible to show the directional information with the aid of light, for example LEDs (= light emitting diodes). They can be configured in a circle. The direction, in which the vehicle is located, can be determined with respect to the center point of the circle. Two diagonally opposite LEDs can also be activated. Thus the direction can be determined and indicated relatively. Frequently this information is adequate. Of the two directions that are thus possible, the driver has

only to eliminate the direction opposite the actual direction.

In contrast, an improvement is a design that shows correctly and clearly the direction. One prerequisite is a corresponding directional characteristic of the antennas.

In another improvement of the invention the antennas determine not only the direction but also, in fact, the distance of the vehicle from the respective location. Thus, the vehicle user has the information, how far away the vehicle is from his respective location, where he and his mobile transponder are located.

The invention is explained in detail with reference to the drawings.

Figure 1 is a first embodiment of the invention, and

Figure 2 is an alternative to the embodiment of Figure 1.

In the embodiment from Figure 1, comprising the parts a, b, and c, a mobile transponder 1, whose individual parts are depicted in b), is integrated into a mechanical vehicle key 2 (a)). The transponder 1 contains four antennas 11, 12, 13, and 14, of which two 11, 12 or 13, 14 are separated from each other by an intercalated shielding plate 3, 4. The antennas exhibit necessarily due to the effect of the shielding plates a directional characteristic that is symbolized by the dashed lobes 11' - 14'.

The antennas 11 to 14 are assigned a change-over switch 5, by means of which the antennas are activated in sequence by means of an evaluating unit 6. The antennas emit in response to a manual command an interrogation signal, which is picked up by the sought-for vehicle and is answered through output of a response signal by means of the vehicle. This command is sent by actuating a remote operating push button VR in the key head 9.

By means of the change-over switch 5 these response signals are entered sequentially into the evaluating unit 6 by means of an appropriate conditioning circuit 7. Owing to the antennas' sensitivity to direction, shown in c), the result of evaluating the entire 4 response signals is information about the location of the vehicle. This information is shown with the aid of a visual display 8, which is

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provided in the surface of the key head 9. The display 8 comprises LEDs, configured in a circle around a center 8'.

Of these LEDs the LED lying in the direction of the sought-for vehicle and the LED located in the center are activated. In the case of a horizontal arrangement of the key head 9, the direction, in which the sought-for vehicle is located, is determined by the imaginary connection of these LEDs

It is also possible with an arrow arranged between the two activated LEDs to present a measure of the vehicle's distance. In the case of a short distance of, e.g. less than 50 m, the arrow is intensely illuminated; for a greater distance, in contrast, the illumination is weaker. A measure for distance follows from a strength comparison of the response signals picked up with the corresponding antennas 11 and 12 or 13 and 14. Assuming that the signals from the sought-for vehicle are emitted at constant intensity, the result of forming the quotient of the intensity of the corresponding response signals and the evaluation of this quotient with the individual intensity is information about the distance of the sought-for vehicle from the transponder 1.

In the embodiment depicted in Figure 2, there are, instead of four antennas, three antennas 21, 22, 23. They also exhibit the directional characteristics, shown with the dashed line. Thus, it is again possible in the respective sequence of interrogation and response signals, which are emitted one after the other with each of the antennas or are picked up as the response of the vehicle, to obtain as information the desired direction and also, by comparison of the intensity of the respective signals, their distance and to display visually by means of a visual display, like an arrow in a display, or, as shown in Figure 1, in an LED circle.

Patent Claims

1. Mobile transponder for vehicles, with a visual display of the state of a vehicle, characterized in that the mobile transponder (1) comprises antennas (11 - 14 or 21 - 23) having a three dimensional directional characteristic, which pick up a signal emitted from the vehicle, and from that obtain directional information about the location of the vehicle with respect to the mobile transponder, and with such a design of the display that from it this direction can be recognized.
2. Mobile transponder, as claimed in claim 1, characterized in that the direction can be absolutely recognized from the design of the antennas.
3. Mobile transponder, as claimed in claim 1 or 2, characterized in that the information obtained with the antennas also enables a statement about the distance of the vehicle from the mobile transponder.
4. Mobile transponder, as claimed in claim 3, characterized in that the distance is presented by means of the display.

Key to Figure 1a:

Fernbedienungstaste	=	remote control push button
Richtungsanzeige	=	directional display
durch aktive LED's	=	by means of active LEDs
LED's zur	=	LEDs for
Richtungsanzeige	=	display of direction

key to Figure 1b:

Antennen mit	=	antennas with
Richtungsvektor	=	directional vectors
HF Empfänger mit	=	high frequency receiver with
Antennenumschalter	=	antenna change-over switch
AGC	=	automatic gain control
Daten	=	data
Feldstärke	=	field strength
Antennenselektion	=	antenna selection
Auswertelogik mit	=	evaluation logic with
LED Ansteuerung	=	LED drive

key to Figure 1c:

Pegel an den einzelnen Antennen
Level at the Individual Antennas

Antenne	=	antenna
Ergebnis	=	result

key to Figure 2

[translator's note: same as Figure 1b]

1/2

FIG. 1a

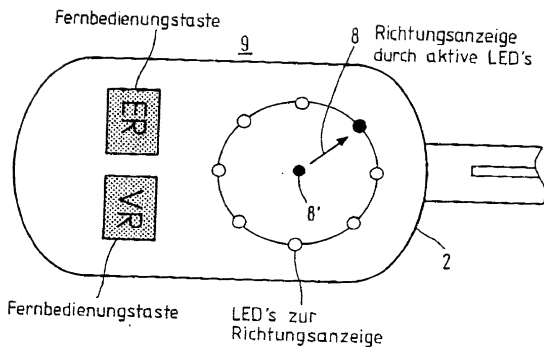
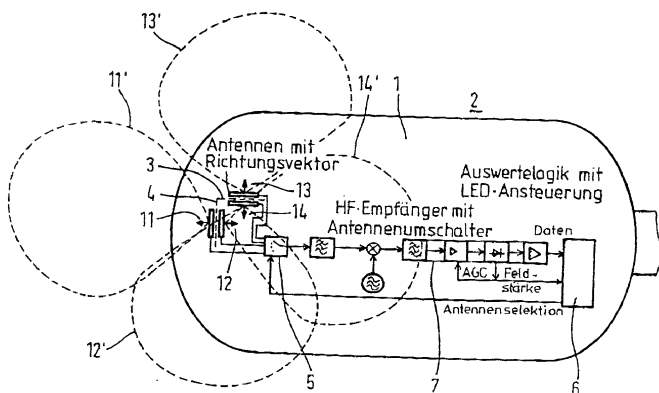


FIG. 1b



2/2
FIG. 1c

Pegel an den einzelnen Antennen
Antenne 3

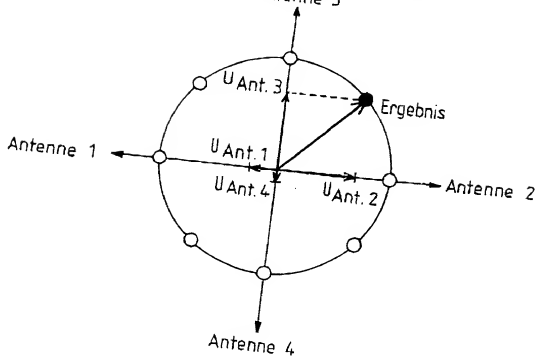
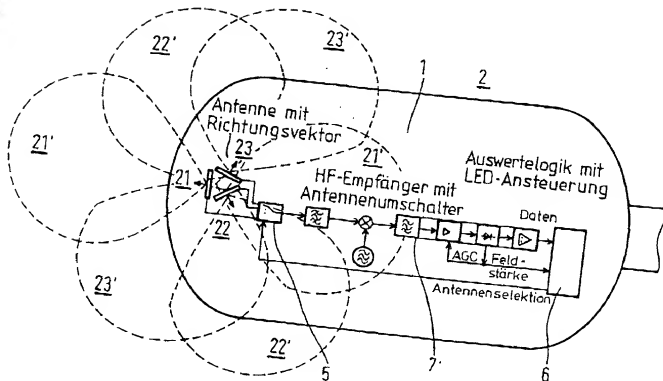


FIG. 2



20 MAR 2001

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY
(Includes Reference to PCT International Applications)ATTORNEY'S DOCKET
NUMBER
951/49329

As a below named inventor, I hereby declare that:

residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

MOBILE TRANSPONDER FOR A MOTOR VEHICLE

the specification of which (check only one item below):

☐ is attached hereto.☐ was filed as United States application

Serial No. _____
on _____
and was amended
on _____ (if applicable).

☒ was filed as PCT international application

Number PCT/EP99/02819
on April 27, 1999
and was amended under PCT Article 19
on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations. §1.56(a).

I hereby claim foreign priority benefits under Title 35, United State Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:

COUNTRY (if PCT indicate PCT)	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 USC 119
Germany	198 20 921.5	9 May 1998	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No



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PATENT TRADEMARK OFFICE



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